SYLLABUS

1. Course title:

Mathematics II

2. Code:

MAT2

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

-

7. Class restrictions:

-

8. Duration / semester:

1 2

9. Weekly contact hours:

9.1. Lectures:	3
9.2. Seminars:	2
9.3. Laboratory/Practice classes:	0

10. Faculty:

Faculty of Electrical Engineering

11. Department/study program:

Electrical Engineering and Computer Science

12. Lecturer:

PhD.Nermin Okičić,assoc.prof., PhD.Elvis Bara

13. Lecturer's e-mail:

nermin.okicic@untz.ba, elvis.barakovic@unt

14. Web site:

15. Course aims:

After completing the course Mathematics I and the processed parts from linear algebra and the real functions of a variable, we generalize learned to the real function of multiple variables. Through limits, differentiation and integrability of functions of several variables, the candidate is trained for various applications of this calculus, in understanding of such functions, as well as various types of extremization.

16. Learning outcomes:

At the end of the semester, the students which have continuously fulfilled their obligations, will be equipped for:
examine the properties of numerical sequences and learn tools for computing limtis of sequences;
examine the properties of numerial series;
examine the properties of functional sequence and functional series;
solve different types of differential equations;
examining the properies of functions of several variables, calculating limit values, and examining the continuity of functions;
determine the directional derivative, partial derivative and partial differentials, the gradient, higher order derivations and the extrema for functions of several variables;
work with multiple integrals, computing and application;
work with the first and second type of line integrals, computation and application.

17. Course content:

Sequences and series. Real sequences. Definition and basic terms. Convergent series properties. Infinite limit values. Monotone sequences. Tools for calculating of limits. Subsequences. Numerical series.Definition and properties of numerical series. Series with positive members. Series with arbitrary members. Functional sequences. Definition and properties. The significance of uniform convergence. Functional series. Definition and properties. Power series. Maclaurin series. Differential equations: Equation with separated variable. Homogeneous equation. Linear equation. Bernoulli's equation. Total differential equation. Linear higher order equations with constant coefficients.Vector spaces.Functions of several variables. The limit value of functions of several variables and the continuity. The limit value. Simultaneous and consecutive limit value. Continuity of functions of several variables. Differentiability of functions of several variables. Directional derivatives. Partial derivative and partial differential. Gradient. Differentiability of functions of several variables: high order derivatives and Hessian matrix. High order differentials. Extrema for functions of several variables. Conditional extrema. Multiple integration.Integral sums. Properties of integrable functions.Double integral. Triple integral. jacobian determinanat. Substitution rule in double integral. Substitution rule in triple integral. Application of multiple integrals. Line integrals.

18. Learning methods:

The following activities of successful learning are planned: concrete experience, observation and reflection, creation of abstract concepts. Styles of learning are preferred: visual style, logical-mathematical and independent.
The most important learning methods in the subject are:
- Lectures, techniques of active learning and with active participation and discussion of students;
- Exercises;
- Individual solving of selected tasks in the form of a homework.

19. Assessment methods:

Tests during course 70
Final exam 25
Activity and attendance in teaching 5
Total 100

20. Assessment components:

Ocjenjivanje

Osvojen broj bodova	Ocjena (BiH)	(ECTS ocjena)
< 54	5	F
54 – 63	6	E
64 – 73	7	D
74 – 83	8	C
84 – 93	9	B
94 – 100	10	

21. Required reading list:

1. N.Okičić, V. Pašić: Matematika II, skripta, Univerzitet u Tuzli 2015.
2. Milan Merkle: Matematička analiza, Beograd 1996.
3. P.Milicic, M.Uščumlic, Zbirka zadataka iz Matematike I i II, Gradevinska knjiga, Beograd, 1972.
4. B.Demidovic, Zadaci i riješeni zadaci iz više matematike s primjenom na tehnicke nauke, Tehnicka knjiga, Zagreb, 1986.

22. Web sources:

http://www.pmf.untz.ba/studijski_odsjeci/mat/zaposleni/Nermin%20Okicic/ETF/M2/Matematika2ETF.htm
http://www.frontslobode.org/elvis/fetM2.htm

23. Applicable starting from the academic year:

2016/2017

24. Adopted in the Faculty/Academy session:

04.04.2016.